**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT**

# Draft Socioeconomic Assessment For Proposed Amendments to Rule 2202 – On Road Motor Vehicle Mitigation Options

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**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT**

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## INTRODUCTION

Proposed Amended Rule 2202 (PAR 2202) calls for amendments to update the rule emission factors based on the EMFAC 2002 emission model adopted by the California Air Resources Board (CARB). The proposed amendments would also clarify language in the rule and its guidelines. Furthermore, it is proposed that future rule guideline amendments be made in consultation with stakeholders and approved by the AQMD Mobile Source Committee rather than the AQMD Governing Board.

The proposed amended implementation guidelines discuss administration of the Emission Reduction Strategies (ERS), Air Quality Investment Program (AQIP), Trip Reduction Strategies (TRS), and employee commute reduction program (ECRP). Major changes to Rule 2202 include increased emissions reduction targets (ERTs) required of worksites, allow for interpollutant trading of VOC emission credits for CO emission credits, and changes in administration of ECRPs. PAR 2202 would be effective starting 90 days after rule adoption.

## REGULATORY HISTORY

Rule 2202 has been amended several times and replaced Rules 1501—Work Trip Reduction Plans and 1501.1—Alternatives to Work Trip Reduction Plans. In 1987, Reg. XV was adopted which required trip reduction plans for employers with 100 or more employees. Rules 1501 and 1501.1 were adopted in 1993 and amended in 1995, to comply with federal and state requirements for extreme non-attainment areas. In 1995, Rule 2202 was adopted to respond to state legislation prohibiting mandatory trip reduction plans. Rule 2202 provided worksites of 100 or more employees a menu of emission reduction strategies to meet the ERTs for their worksite. Compliance strategies included mobile source credits from old-vehicle scrapping, clean on-road and off-road equipment, the use of remote sensing to identify and repair gross polluting vehicles, and emission reduction credits from stationary sources. Worksites could also earn credits for the use of alternative fuel vehicles, reduction of vehicle miles traveled, and other trip reduction strategies.

In March 1996, Rule 2202 was amended to exempt school districts from complying due to financial hardship. The passage of SB836 and SB432 directed SCAQMD to raise the employee threshold level from 100 to 250 employees, permanently exempting worksites with fewer than 250 employees from complying with the rule. In November 1996, the sunset provision of Rule 2202 was modified to have the rule phase out by June 2001. In October 1998, Rule 2202 was remodified back to its original sunset provision, i.e., the rule would be rescinded at an unspecified future time when an equivalent level of emissions reductions is produced. In January 2002, several administrative changes to Rule 2202 were passed that did not have significant socioeconomic impacts. These include the elimination of alternative fuel vehicle credits except for zero emission vehicles, replacement of remote sensing with an Inspection and Maintenance program, and the addition of a police/sheriff employee category.

## AFFECTED FACILITIES

In 2002, there were 1,332 worksites in the district affected by Rule 2202. Of these worksites, 1,077 sites represent medium-sized worksites comprising 250 to 1,000 employees (81%) and 255 represent large worksites of more than 1,000 to as many as 32,000 employees (19%). These worksites are not concentrated in any particular sector.

These worksites have the option of participating in three types of programs: ERS, AQIP, and ECRP. For ERS, the goal is to meet the ERTs for that worksite, which depends on the number of employees reporting to work during the window time period, the employee emission reduction factor for that zone, and the number of vehicle trip emission credits. Under AQIP, worksites would pay a fixed amount per employee reporting to work during the window time period to the AQMD for the achievement of equivalent mobile source emission reductions through the most cost effective proposals submitted to the AQMD. For ECRP, the goal is to achieve an average vehicle ridership (AVR) ranging from 1.75 to 1.3 for zones 1, 2 and 3. Data gathered from the Rule 2202 database since 1997 (the year that the employee threshold changed from 100 to 250 employees) indicates that ECRP, although historically the most popular option, is steadily decreasing in popularity and that AQIP is increasing in popularity compared to ERS. This is shown below in Table 1.

**Table 1: Program Implementation by Worksite**

| Year | ECRP | AQIP | ERS |
|---|---|---|---|
| 2002 | 57% | 21% | 22% |
| 2001 | 58% | 16% | 26% |
| 2000 | 61% | 8% | 31% |
| 1999 | 64% | 3% | 33% |
| 1998 | 67% | 8% | 25% |
| 1997 | 68% | 9% | 23% |

The majority of worksites are from Los Angeles County. Table 2 shows the number of worksites participating in each type of program by county from 1997 to 2002.

**Table 2: Number of Sites by Program and by County, 1997-2002**

| County | Program | Year | | | | | |
|---|---|---|---|---|---|---|---|
| | | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
| ***LA*** | *ERS* | 176 | 226 | 289 | 269 | 191 | 162 |
| | *AQIP* | 91 | 78 | 43 | 70 | 147 | 166 |
| | *ECRP* | 696 | 631 | 632 | 601 | 522 | 517 |
| *TOTAL* | | 973 | 935 | 968 | 938 | 859 | 845 |
| ***Orange*** | *ERS* | 101 | 118 | 138 | 126 | 99 | 84 |
| | *AQIP* | 32 | 29 | 13 | 33 | 73 | 76 |
| | *ECRP* | 208 | 198 | 176 | 168 | 135 | 137 |
| *TOTAL* | | 343 | 345 | 327 | 326 | 303 | 297 |
| ***Riverside*** | *ERS* | 31 | 38 | 41 | 38 | 37 | 33 |
| | *AQIP* | 4 | 3 | 5 | 11 | 13 | 18 |
| | *ECRP* | 50 | 45 | 43 | 47 | 49 | 49 |
| *TOTAL* | | 87 | 87 | 91 | 96 | 99 | 100 |
| ***San Bern.*** | *ERS* | 20 | 26 | 37 | 33 | 27 | 16 |
| | *AQIP* | 7 | 6 | 4 | 5 | 12 | 17 |
| | *ECRP* | 73 | 70 | 63 | 62 | 58 | 57 |
| *TOTAL* | | 102 | 104 | 104 | 100 | 97 | 90 |

The increase in ERTs in the proposed amendments would have the potential to increase the cost of complying with Rule 2202 for the 295 worksites currently participating in ERS. Of these worksites, 234 sites are from medium-sized worksites comprising 250 to 1,000 employees (79%) and 61 are from large worksites of more than 1,000 to as many as 32,000 employees (21%). These worksites are not concentrated on any particular sector.

**COMPLIANCE COSTS**

The proposed amendments would increase the employee emission reduction targets and emission factors for 2003-2010, relative to the current factors. This has the effect of requiring higher ERTs for any given year for the proposed rule conditions than for the current rule conditions. ERS participants would have the option to stay with ERS or switch to AQIP or ECRP. Due to the significant administrative requirements in implementing an ECRP, worksites who have not created an ECRP in the past are unlikely to do so. The choice between AQIP and ERS would be based on their relative cost. The proposed amendments also allow for interpollutant credit trading between VOC and CO emission credits. Worksites having a bank of stationary or mobile source VOC credits will now be allowed to use these to offset their CO emission reduction requirements, resulting in some reduction in CO emission reductions. Otherwise, the effect of this proposed amendment is not possible to define.

AQIP has a fixed cost of $60 per employee reporting to work during the window period for the one year option and $125 per employee for the three year option.[1] The increase in ERTs may eventually have some effect on the price structure of AQIP, depending on its ability to find programs that achieve the increased emission reductions at the same price. Some worksites choose to sign one year AQIP or ERS contracts so as not to lose the potential opportunity of purchasing mobile source emission credits (MSERC), emission reduction credits (ERC) from stationary sources, or area source credits (ASC) for a lesser amount. Other worksites choose instead to sign the more economical three year AQIP or ERS contracts.

ERS requires worksites to meet specific ERTs and use MSERCs, ERCs, and ASCs that are either generated through the worksite's own emission reduction efforts or are available through other worksites and credit vendors. MSERCs generated from vehicle scrapping (Rule 1610) are the biggest source of credits generated or purchased by worksites to meet their ERTs.[2] The price of these credits (MSERC, ERC, and ASC) is not known for all worksites since MSERCs are administered privately. In general, MSERCs are market priced to be competitive with the costs of AQIP.

Two ERS worksites of different sizes were surveyed to assess their compliance costs with respect to ERS and AQIP under the current rule and the proposed amendments from 2003 to 2010. The large worksite has over 4,000 employees and the medium-sized worksite has over 650 employees. It is assumed that prices of MSERCs remain constant over the analysis period for the two

[1] For worksites, AQIP will not be affected by increased ERTs under the proposed amendments at this time.
[2] The total number of vehicles (1982-1985 model years) to be scrapped under Rule 1610 is projected to be 9,256 over the next four years. This will generate a reduction of 506,100 pounds of VOC, 754,000 pounds of NOx, and 5,327,900 pounds of CO by the end of 2006. These figures are based on the December, 2002 staff report for amendments to Rule 1610.

worksites surveyed. Table 3 illustrates the potential impacts of the proposed amendments on the two sizes of worksites.[3]

The large worksite paid roughly $4.66 per pound of MSERC[4] based on a three year contract for MSERCs. AQIP is calculated using the three year price of $125 per person to match the contract period for MSERCs. Under the proposed amendments, AQIP is cheaper than ERS for 2003 and 2004. ERS becomes more economical from 2005 to 2010 because the increase in the ERTs is smaller in later years, compared to the existing rule. The medium-sized worksite paid $8.87 per pound of MSERC based on a one year contract for MSERCs. Under the proposed amendments, AQIP is cheaper than ERS for 2003 and 2004 for the one year price for AQIP and is cheaper than ERS until 2009 for the three year price for AQIP.

**Table 3: AQIP and ERS Costs for Large and Medium-Sized ERS Worksites Under Current and Proposed Rule Conditions**

| **Worksite Size** | | **Large** | | **Medium-Sized** | |
|---|---|---|---|---|---|
| **Year** | **Rule Version** | **AQIP Cost** | **ERS Cost** | **AQIP Cost** | **ERS Cost** |
| 2003 | Current | $170,792 | $146,492 | $39,480 | $35,273 |
| | Proposed | $170,792 | $198,071 | $39,480 | $47,724 |
| 2004 | Current | $170,792 | $133,610 | $39,480 | $32,264 |
| | Proposed | $170,792 | $179,543 | $39,480 | $43,519 |
| 2005 | Current | $170,792 | $124,449 | $39,480 | $30,082 |
| | Proposed | $170,792 | $161,754 | $39,480 | $39,098 |
| 2006 | Current | $170,792 | $115,499 | $39,480 | $27,833 |
| | Proposed | $170,792 | $152,642 | $39,480 | $37,329 |
| 2010 | Current | $170,792 | $88,422 | $39,480 | $21,369 |
| | Proposed | $170,792 | $102,944 | $39,480 | $24,924 |

Based on the differential between the lowest cost compliance option under the proposed amendments and the current rule, large worksites can expect to pay as much as an additional $37,143 as a result of the proposed amendments and medium-sized worksites can expect to pay an additional $9,496 under the proposed amendments. These cost impacts do not appear to be of a magnitude that cannot be sustained by affected worksites in the Basin as they are of relatively short duration and would decrease gradually after 2006.

Worksites often rely on consultants to determine the most economical option. The range of compliance options available with Rule 2202 makes it impossible to calculate the cost impact for all worksites. Based on the analysis of two sizes of worksites, after 2004 ERS will prove to be the most cost-effective strategy as the increase in ERTs becomes smaller. AQIP will generally be a more cost-effective strategy for worksites in 2003 and 2004 based on paying a three year AQIP rate. For small worksites, AQIP is generally the most cost effective strategy. It is anticipated that the number of worksites implementing ECRPs will continue to remain relatively stable, and that AQIP will rise somewhat in popularity for 2003 and 2004 but will then be supplanted by a move

[3] Some small worksites are required by other cities to comply with a citywide version of Rule 2202 for worksites with 50 or more employees. One small worksite surveyed paid $6.90 per pound of MSERC based on a three year contract for MSERCs. Analysis of the impact of the proposed amendments indicates that AQIP is cheaper than ERS for 2003-2010.

[4] MSERCs are calculated based on a combination of VOC, NOx, and one-seventh of CO.

towards ERS. Table 4 below shows the expected cost impacts for large and medium-sized worksites.

**Table 4: Cost Impacts on Large and Medium-Sized Worksites by PAR 2202**

| **Large Worksites** | | | | |
|---|---|---|---|---|
| **Difference Between Current and New Rule 2202** | **2003** | **2004** | **2006** | **2010** |
| Additional Cost | $24,300 | $37,182 | $37,143 | $14,522 |
| Percentage Increase | 17% | 28% | 32% | 16% |
| **Medium-Sized Worksites** | | | | |
| **Difference Between Current and New Rule 2202** | **2003** | **2004** | **2006** | **2010** |
| Additional Cost | $4,207 | $7,216 | $9,496 | $3,555 |
| Percentage Increase | 12% | 22% | 34% | 17% |

## RULE ADOPTION RELATIVE TO THE COST-EFFECTIVENESS SCHEDULE

On October 14, 1994, the Governing Board adopted a resolution requiring staff to consider rules being proposed for adoption in order of cost-effectiveness. The Air Quality Management Plan (AQMP) ranked, in order of cost-effectiveness, all of the proposed control measures for which costs were quantified, with the most cost-effective measures to be taken first.

The proposed amendments to Rule 2202 are to ensure consistency with CARB's regulations, clarify emission reduction credits applicable under the rule, and streamline the process of future changes to the rule by requiring only the approval of the Mobile Source Committee. Since PAR 2202 is not an AQMP control measure, consideration in order of cost-effectiveness is not required.

## INCREMENTAL COST-EFFECTIVENESS

Health and Safety Code Section 40920.6 requires an incremental cost-effectiveness analysis for proposed control options which would achieve the emission reduction objectives relative to ozone, CO, SOx, NOx, and their precursors in the proposed regulation. It is uncertain whether the proposed amendments would result in additional emissions reductions because affected worksites are allowed to choose the most cost-effective control option, which may vary from one worksite to another.

**REFERENCES**


Clark County, Nevada Department of Planning. "Cost Effectiveness Analysis of August 2000 Carbon Monoxide State Implementation Plan: Cost of Transportation Control Measures." 2001.

Price, Tricia. Presentation at European Conference on Mobility Management, "Employer Transportation Programs in Los Angeles, Myth vs. Reality." May 2002.

South Coast Air Quality Management District (SCAQMD). Staff Report for Proposed Amended Rule 2202—On Road Vehicle Mitigation Options. December 1995.

South Coast Air Quality Management District (SCAQMD). Board letters from Proposed Amended Rule 2202—On Road Vehicle Mitigation Options. February and November 1996.

South Coast Air Quality Management District (SCAQMD). Staff Report for Proposed Amended Rule 2202—On Road Vehicle Mitigation Options. October 1998.

South Coast Air Quality Management District (SCAQMD). AQIP--Cost effectiveness data from Rules 1190, Regulation XIII, Regulation XX. 2000-2001.

South Coast Air Quality Management District (SCAQMD). Staff Report for Proposed Amended Rule 2202—On Road Vehicle Mitigation Options. January 2002.

South Coast Air Quality Management District (SCAQMD). Rule 2202—Air Quality Investment Program Proposal. February 2002.

South Coast Air Quality Management District (SCAQMD). Rule 1610—Old Vehicle Scrapping Quarterly Update. July 2002.

South Coast Air Quality Management District (SCAQMD). Rule 2202 On Road Motor Vehicle Mitigation Options 2001 Program Status Report to Mobile Source Committee. September 2002.

South Coast Air Quality Management District (SCAQMD). Rule 2202—Air Quality Investment Program RFP. November 2002.

South Coast Air Quality Management District (SCAQMD). Staff Report for Proposed Amended Rule 2202—On Road Vehicle Mitigation Options. November 2002.

South Coast Air Quality Management District (SCAQMD). Rule 2202 database. December 2002.

South Coast Air Quality Management District (SCAQMD). Rule 2202 On Road Motor Vehicle Mitigation Options Employee Commute Reduction Program Guidelines. December 2002.

South Coast Air Quality Management District (SCAQMD). Rule 2202 On Road Motor Vehicle Mitigation Options Implementation Guidelines. December 2002.

Wachs, Martin. Synopsis of article "Regulation XV in Southern California: Success or Failure?" *TDM Review*. Association for Commuter Transportation. December 1995.